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EXAMINER

WASSUM, LUKE S

ART UNIT	PAPER NUMBER
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2177

DATE MAILED: 11/13/2003

17

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/435,034

Applicant(s)

NISHIZAWA ET AL.

Examiner

Luke S. Wassum

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2 October 2003 has been entered.

Response to Preliminary Amendment

2. The Applicants' preliminary amendment, filed 2 October 2003, has been received, entered into the record, and considered.

3. As a result of the amendment, claim 36 has been amended. Claims 1-34 have been previously cancelled. Claims 35-37 remain pending in the application.

The Invention

4. The claims are drawn to a data warehouse system whereby partial replicas can be created in response to a user query in order to improve query response. In the art of data processing, this technique is known as dynamic data replication.

Drawings

5. The drawings are objected to because Figures 10A and 10B are marked up corrections. In keeping with new Office policy regarding drawing corrections, a formal corrected drawing is required in response to this Office action in order to avoid abandonment of the application. See 37 C.F.R. §1.85(a).

The objection to the drawings will not be held in abeyance.

Specification

6. In view of the amendment to the specification, the examiner withdraws all pending objections to the specification.

Claim Objections

7. In view of the amendment to claim 36, the examiner withdraws all pending objections to the claims.

8. Claim 36 is objected to because of the following informalities:

In the last line of the 'query analysis unit' limitation, the word 'from' is misspelled 'form'.

Appropriate correction is required.

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Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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12. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rabinovich** (U.S. Patent 6,256,675) in view of **Olson et al.** (U.S. Patent 5,995,980) in view of **Hammond** (U.S. Patent 5,758,337).

13. Regarding claims 35-37, **Rabinovich** teaches a data warehouse system as claimed, comprising:

- a) a plurality of client devices, each for accepting a processing request from each user thereof
(see Requester 109 in Figure 1; see also col. 4, lines 41-65);
- b) a server provided with a database and used for searching said database according to access requests from said client devices (see hosts 103, 104 and 105 in Figure 1; see also col. 4, lines 45-50; see also root replica, in Figure 11 and also at col. 13, lines 44-52);
- c) at least one data collector, each being associated with at least one of said client devices and each being provided with a storage device, each for collecting data requested by a corresponding user and storing the data into said storage device as a replica partially replicating said database (see discussion of the replica placement decision making process, col. 8, line 32 through col. 9, line 23);
- d) a network for connecting said client devices to said server respectively via data collector
(see network 102 in Figure 1);

wherein each of said data collectors comprises:

- i) a replica creation control means for determining whether a new replica of said database is to be created and stored in said storage device, in response to a replica creation request from a corresponding client device (see discussion of the replica placement decision making process, col. 8, line 32 through col. 9, line 23);

- ii) a query analysis unit for analyzing a query processing request from one of said client devices to select, as an object to be searched, a replica stored in said storage device (see discussion of Request Distributor, col. 4, lines 40-65, et seq.);
- iii) a query processing unit for searching said replica stored in said storage device according to a query analysis result from said query analysis unit (see discussion of Request Distributor, col. 4, lines 40-65 et seq., and particularly the disclosure of determination of metrics in selecting a host to which the request is to be forwarded, lines 45-59); and
- iv) a communication control unit for selecting a procedure for accessing said server according to analysis result (see discussion of Request Distributor, col. 4, lines 40-65 et seq., and particularly the disclosure of forwarding a request to a selected host, lines 55-61); and

wherein said server comprises:

- i) a communication control unit for receiving a query analysis result transmitted from said data collector (see discussion of Request Distributor, col. 4, lines 40-65 et seq., and particularly the disclosure of the selected host sending a response to the requester, lines 59-61); and
- ii) a query processing unit for searching the database of said server (see discussion of Request Distributor, col. 4, lines 40-65 et seq., and particularly the disclosure of the selected host sending a response to the requester, lines 59-61).

Rabinovich does not explicitly teach an implementation of the data warehouse system where the objects correspond to databases.

Olson et al., however, teaches a data warehouse system where the objects correspond to databases, including:

- a) at least one client device (see col. 5, lines 61-67; see also User Clients 24_1 , 24_{n-1} and 24_n in Figure 1);
- b) at least one server (see col. 5, lines 55-60; see also Central Computer 11 in Figure 1);
- c) at least one data collector for collecting data requested by the user (see col. 6, lines 28-56; see also Figure 2; see also col. 8, lines 25-67);
- d) a database for storing data collected by the data collector (see col. 5, lines 61-67; see also databases 22_1 , 22_{n-1} and 22_n in Figure 1);
- e) a network (see col. 3, lines 50-52); and

wherein each replica is managed so that a replica can be shared among cooperative data collectors when processing said query which corresponds the content of said created replica to information related to the location of said replica stored in said database (see col. 1, lines 21-24; see also col. 3, lines 34-36; see also col. 7, line 19 through col. 8, line 25; see also Figure 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the replica management and query distribution functions as taught by **Rabinovich** to a partially replicated database system such as that taught by **Olson et al.**, since replicated databases reduce contention for access to a primary database, as well as providing a backup in the event of media failure (see col. 1, lines 17-26).

Neither **Rabinovich** nor **Olson et al.** explicitly teaches a system wherein definitions of the partial replicas are stored in a table.

Hammond, however, teaches a system wherein definitions of the partial replicas are stored in a table, including a location of each replica stored in storage device of cooperative data collectors (see Figure 8; see also col. 6, line 24 through col. 7, line 60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a table to define the partial replicas, since storing information defining each partial replica in a table allows the system to manage the creation and synchronization of data between the master database and the partial replicas (see col. 6, lines 24-65).

Response to Arguments

14. Applicant's arguments with respect to claims 35-37 have been considered but are not persuasive.

15. Regarding the Applicants' arguments concerning the shortcomings of the **Rabinovich** reference, the examiner has re-evaluated the reference and presents new grounds of rejection based on new interpretation of the reference.

In particular, the examiner interprets the reference as anticipating the functionality of the claimed data collector through the combination of the disclosed Request Distributor and the replica placement decision making process.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rabinovich (U.S. Patent 6,484,204) teaches a system for distributing requests for objects to hosts that store replicas of the objects, and for managing the placement of the replicas among the hosts.

Acharya et al. ("An Efficient Scheme for Dynamic Data Replication") teaches a scheme to increase the performance of a distributed data system by intelligent placement of data so as to optimize the message traffic in the network.

Wolfson et al. ("An Adaptive Data Replication Algorithm") teaches an algorithm for dynamic replication of an object in distributed systems.

The following reference, while not qualifying as prior art, is also of interest.

Scharber (U.S. Patent 6,542,964) teaches a system for dynamic data replication.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke S. Wassum whose telephone number is 703-305-5706. The examiner can normally be reached on Monday-Friday 8:30-5:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on 703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

In addition, INFORMAL or DRAFT communications may be faxed directly to the examiner at 703-746-5658.

Customer Service for Tech Center 2100 can be reached during regular business hours at (703) 306-5631, or fax (703) 746-7240.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.


Luke S. Wassum
Art Unit 2177

lsw
12 November 2003